

GENERAL AWARENESS

For All Competitive Exams



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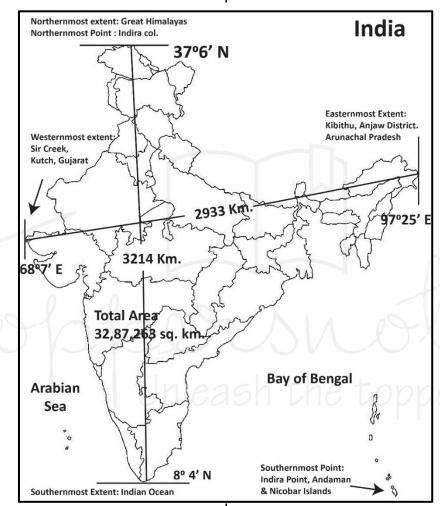
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1CHAPTER

India-Size & Location

- 7th largest country in the world.
- Situated in the northern hemisphere (8°4'N to 37°6'N and 68°7'E to 97°25'E)
 - India lies to the north of the equator between 6°
 44' and 37°6'N latitude and 68° 7' and 97° 25' east longitude (including the islands).
- Area: 32,87,263 sq. km (2.42% of the world)
- 2nd most populated country in the world (17.5% of the world's population)
- Total land boundary = 15,200 km.
- Total Sea boundary = 7516.6 Km
 - Without islands = 6100 Km



Border Countries:

North-	Afghanistan and Pakistan		
west	Indo-Pak border: Radcliffe line		
	• Pak	- Afghanistan border: Durand	
	Line		
North	China, Bhutan and Nepal		
	• Indo	o-China border: McMahon line	
East	• Mya	Myanmar, Bangladesh	
	• Long	gest boundary with Bangladesh	
South	Sri Lanka		
	• Sepa	arated by Palk Strait & Gulf of	
	Mar	nnar	

States sharing International borders:

Bangladesh	5 States: West Bengal, Mizoram,		
	Meghalaya, Tripura, and Assam (4096		
	km)		
China	4 States and1 UT: Himachal Pradesh,		
	Uttarakhand, Sikkim, Arunachal		
	Pradesh and Ladakh (3488 km)		
Pakistan	3 States and 2 UTs: J&K, Punjab,		
	Gujarat, Rajasthan and Ladakh (3323		
	km)		

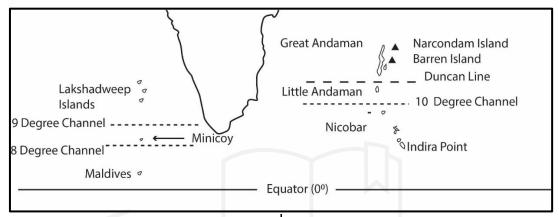
Nepal	5 States: Uttar Pradesh, Bihar,		
	Uttarakhand, Sikkim, West Bengal		
	(1751km)		
Myanmar	4 States: Arunachal Pradesh, Manipur,		
	Mizoram, and Nagaland (1643 km)		
Bhutan	4 States: Arunachal Pradesh, Assam,		
	Sikkim, and West Bengal (699 km)		
Afghanistan	1 UT: Ladakh (106 km)		

Indian Standard Meridian

 82°30'E, Mirzapur(UP) - India's Standard Meridian.

- O Ahead of meantime by 5 hours and 30 minutes.
- States through which IST Passes: Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Odisha and Andhra Pradesh.
- Tropic of cancer (23°30'N) Gujarat, Rajasthan, MP, Chhattisgarh, Jharkhand, West Bengal, Mizoram, and Tripura.
- Coastal states of India: 9 (West Bengal, Odisha, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Goa, Maharashtra, and Gujarat)

Various Channels and their Location



Ten Degree Channel

- Separates the Andaman Islands from the Nicobar Islands in the Bay of Bengal
- 150 km wide from north to south and 10 km long from east to west with a minimum depth of 7.3m.
- Nine Degree Channel
 - Separates Minicoy island from the Lakshadweep archipelago.
 - 200 km wide with a depth of 2597 metres.
 - Strategic importance: Passage of major merchant shipping between Europe, the Middle East and Western Asia with South-East Asia and the far East.

• Eight Degree Channel

- Maritime boundary between the Maldives and India
- Separates the islands of Minicoy and Maldives.
- Traditionally known as Maliku Kandu and Māmalē Kandu Divehi.

Duncan Passage

- A strait in the Indian Ocean.
- Located in between South Andaman and Little Andaman.
- Also lies within the EEZ of India, protected by the integrated tri-services Andaman and Nicobar Command of Indian Military.
- Width: ~ 48km.

2 CHAPTER

Physiographic Divisions of India

Based on physical features, India is divided into six physiographic divisions:

1. Himalayan Mountains

2. Great Plains of India

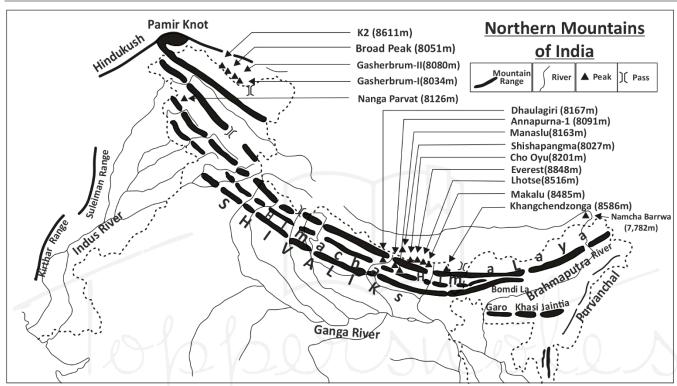
3. Peninsular Plateau

4. Indian Desert

5. Coastal Plains

6. Islands

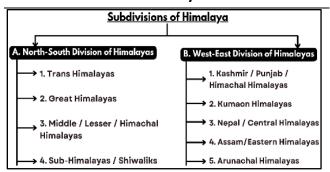
1. Himalayan Mountains



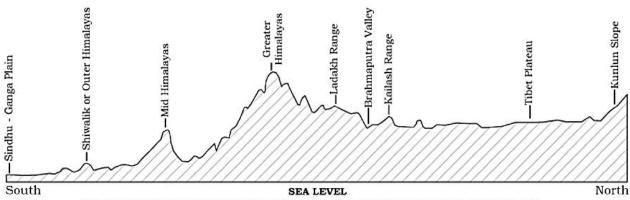
- Highest and the youngest fold mountain ranges of the world
- One of the highest earthquake-prone regions of the world.
- Length: runs west-northwest to east-southeast in an arc 2,500 km long.
 - Western anchor: Nanga Parbat (lies just south of the northernmost bend of the Indus River)
 - Eastern anchor: Namcha Barwa (lies immediately west of the great bend of the Yarlung Tsangpo River)
- Width: 400 km 150 km (West- East).
- Soaring heights, steep-sided jagged peaks, valley and alpine glaciers often of stupendous size
- Topography deeply cut by erosion, seemingly unfathomable river gorges, complex geologic structure, and series of elevational belts (or zones)

- Greater part of the Himalayas lies below the snow line
- The mountain-building process that created the range is still active.
- Considerable stream erosion and gigantic landslides.

Sub Divisions of the Himalayas



A. North-South Division of Himalayas



Himalayan Mountain Complex: Cross Sectional View from South to North

- 1. Trans-Himalayan Ranges:
- Location: North of the Great Himalayas
- Also known as **Tibetan Himalaya** because most of it lies in Tibet.
- Lifted much before the Himalayas between Jurassic and Cretaceous
- Geologically not a part of the Himalayas.
- Start from Pamir Knot.
- Godwin Austen/ K2/ Qogir (8,611 m) second highest peak in the world / highest peak in the Indian Union found in Karakoram Range
- Length- 1,000 km in the east-west direction.
- Average elevation 5000 m above mean sea level.
- Average width 40 km- 225 km (extremities -central part).
- Siachen glacier highest battlefield.
- **Glacier Baltaro** largest Mountain glacier from the Karakoram range.
- Karakoram Pass connects the Aksai Chin, an erosional plateau of an average height 5000m.
- Main ranges:

•		
Karakoram	•	Northernmost range of the
Range		Trans-Himalayan Ranges in India
	•	Also known as Krishnagiri range
	•	Extends eastwards from Pamir
		for about 800 km.
	•	Average elevation - 5,500 m and
		above.
Ladakh	•	North of the Zaskar Range
Range	•	Highest point - Rakaposhi
	•	Lies north of Leh.
	•	Merges with the Kailash range in
		Tibet.
	•	Important passes - Khardung La,
		and Digar La.
Zaskar Range	•	A mountain range in the union
		territory of Ladakh.
	•	Separates Zanskar from Ladakh.

	Average height - about 6,000 m.
	Acts as a climatic barrier
	protecting Ladakh and Zanskar
	from monsoon
	Major passes- Marbal Pass, Zojila
	Pass - extreme northwest.
	Major rivers- Hanle River, Khurna
	River, Zanskar River, Suru River
	(Indus), and Shingo River.
Kailas Range	Offshoot of the Ladakh Range.
	Highest peak - Mount Kailash
	(6714 m).
	River Indus originates from the
	northern slopes of the Kailas
	range.

Ladakh Plateau

- Cold desert
- Lies to the northeast of the Karakoram Range.
- Dissected into many plains and mountains Soda Plains, Aksai Chin, Lingzi Tang, Depsang Plains and Chang Chenmo.
- Northwestern part Deosai mountains are the end of the Trans-Himalayan region
- 2. Great Himalayas:
- Also known as Himadri.
- Average height 6000 m
- Average width 25 km
- Extension Mt. Namcha Barwa to Nanga Parbat (2400 km)- World's one of the longest-running fold mountain ranges
- Features: High relief, deep gorges, vertical slopes, symmetrical convexity, and antecedent drainage.
- Terminates abruptly at the syntaxial bends.
 - Nanga Parbat north-west
 - o Namcha Barwa north-east.
- Composed of metamorphic and sedimentary rocks.

- Core Batholith representing the intrusion of Magma (Granitic Magma)
- Have asymmetrical folds due to high compression, and they have fractured rocks in the eastern part.
- 14 of the 28 tallest peaks in the world (> 8000 m) are situated here.
- Major passes Zojila Pass (connects Srinagar with Leh), Shipki La Pass, Burzil Pass, Nathu La Pass etc.
- Major glaciers Rongbuk glacier (largest in the Himadri), Gangotri, Zemu etc.
- Separated from lesser Himalayas by longitudinal valleys filled with sediments known as Doons.
 - o **Eg.** Patli Dun, Chaukamba Dun, Dehradun etc.

3. Middle/Lesser/Himachal Himalaya:

- Most rugged mountain system.
- Lies between the Shiwaliks in the south and the Greater Himalayas in the north.
- Composed of highly compressed and altered rocks.
- Average altitude 3,700 4,500 metres.
- Average width 50 to 80 Km.
- Pir Panjal range longest
 - Extends from Jhelum upper Beas River for over 300 km.
 - Rises to 5,000 metres and contains mostly volcanic rocks.

Passes:

- o **Pir Panjal Pass** (3,480 m), the Bidil (4,270 m), Gulabgarh Pass (3,812 m) and **Banihal Pass** (2,835 m).
- Banihal Pass- Jammu-Srinagar highway and Jammu-Baramulla railway.
- Rivers: Kishanganga, the Jhelum and Chenab.
- Important Valleys

Valley of	•	Between the Pir Panjal and the		
Kashmir		Zaskar Range (average elevation-		
		1,585 m)		
	•	Composed of alluvial, lacustrine		
		[lake deposits], fluvial [river action]		
		and glacial deposits.		
		Jhelum River meanders through		
		these deposits and cuts a deep		
		gorge in Pir Panjal.		
Kangra	•	Extends from the foot of the		
Valley		Dhauladhar Range to the south of		
		Beas.		
Kullu Valley	•	In the upper course of the Ravi		
	•	A transverse valley.		

 Most important range - Dhaula Dhar and Mahabharat ranges.

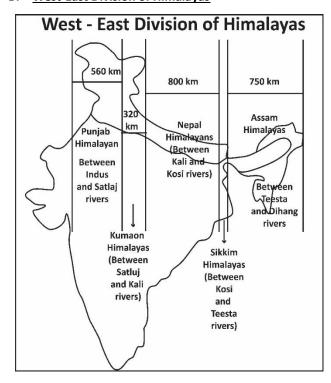
- Includes famous valley of Kashmir, the Kangra and Kullu Valley in Himachal Pradesh.
 - Well known for its hill stations.
- Cut across by the Jhelum and Chenab rivers.
- Dhauladhar ranges an extension of Pir Panjal into Himachal Pradesh - cut across by the river Ravi.
- Mussoorie ranges divide the waters of Sutlej and Ganga
- Have steep, bare southern slopes [prevents soil formation] and gentler, forest-covered northern slopes.
- Uttarakhand- marked by Mussoorie and Nag Tibba ranges.

Important ranges of	Region
Lesser Himalayas	
Pir Panjal Range	Jammu and Kashmir (south
	of Kashmir Valley)
Dhauladhar Range	Himachal Pradesh
Mussoorie Range and	Uttarakhand
Nag Tibba Range	
Mahabharat Range	Nepal

- 4. Sub-Himalayas/ Shiwaliks:
- Also known as Outer Himalayas.
- Between Great Plains and Lesser Himalayas.
- Altitude- 600-1500 metres.
- Length- 2,400 km Potwar Plateau to Brahmaputra valley.
- Southern slopes steep
- Northern slopes gentle.
- Width 50 km 15 km (Himachal Pradesh -Arunachal Pradesh).
- Almost unbroken except for 80-90 km Tista and Raidak River valley.
- Covered with thick forests from North-East India up to Nepal.
- Southern slopes in Punjab and Himachal Pradeshalmost NO forest cover.
- Highly dissected by seasonal streams Chos.
- Valleys part of synclines and hills part of anticlines
- Different names:

Region	Name of Shiwaliks
Jammu Region	Jammu Hills
Dafla, Miri, Abor and	Arunachal Pradesh
Mishmi Hills	
The Dhang Range, Dundwa	Uttarakhand
Range	
Churia Ghat Hills	Nepal

B. West-East Division of Himalayas

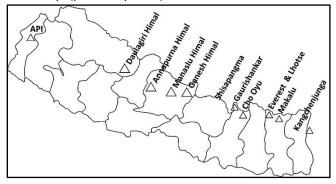


1. Kashmir / Punjab / Himachal Himalayas

- Located between Indus and Satluj gorge
- Length- 560 kms
- Width 320 kms
- Zaskar range northern boundary and Shiwaliks -Southern boundary
- Characterized by ridge and valley topography (Kashmir Valley is the syncline basin) formed by the Lacustrine deposits (Karewas- helpful in growing saffron- from Pulwama to Pampore) of Jhelum.
- Major ox-bow lakes Wular lake, Dal Lake, etc.
- Also known as "Vail of Kashmir"
- Rainfall upto 100cm in summers and snow during winters
- Only gateway to Kashmir Banihal pass Jawahar tunnel (Second Largest in India)
- Major passes- Burzil pass, Zozila pass.
- 2. Kumaon Himalayas
- Located between Satluj and Kali gorges
- Length- 320 kms
- Major mountain ranges Nag Tibba, Dhaula Dhar,
 Mussoorie, and the Greater Himalayas.
- Major peaks Nandadevi, Kamet, Badrinath, Kedarnath, etc.
- Major rivers Gangotri, Yamunotri, Pindari, etc.
- Characteristics:
 - o **Snowfall** in winters
 - Coniferous forests above 3200m and Deodar Forest between 1600-3200m.
 - O Has **tectonic valleys** Kullu, Manali, and Kangra.
 - o Rainfall of about 200cm in summers
 - More prone to Seismicity and landslides.

3. Nepal/ Central Himalaya

- Length- 800 km
- Between Kali in the west and Tista in the east.
- Great Himalayas attain a maximum height in this portion.
- Major peaks- Mt. Everest, Kanchenjunga, Makalu, Annapurna, Gosainthan and Dhaulagiri.
- Lesser Himalaya is known as Mahabharat Lekh here.
- Major rivers- Ghaghara, Gandak, Kosi, etc.
- Major valleys- Kathmandu and Pokhra lacustrine valleys (previously lakes).



4. Assam/ Eastern Himalayas

- Length- 750km
- Located between Tista in the west and Brahmaputra (Dihang gorges) in the east.
- Occupy mainly Arunachal Pradesh and Bhutan.
- Narrow longitudinal valleys
- Rainfall > 200cms.
- Show a marked dominance of fluvial erosion due to heavy rainfall.
- Landslides and earthquakes are very common as rocks are fractured
- Inhabited by tribes
- Important peaks Namcha Barwa (7756 m), Kula Kangri (7554 m), ChomoLhari (7327 m).
- Major hills Also known as hills, Dafla hills, Miri hills, Abor hills, Mishmi hills, Namcha Barwa, Patkai bum, Manipur hills, Blue Mountain, Tripura range, and Braille range.
- Major passes- Bomdi La, Yong Yap, Diphu, Pangsau, Tse La, Dihang, Debang, Tunga, and Bom La.

5. <u>Arunachal Himalayas</u>

- Form the eastern frontier of the Eastern Himalayas.
- Namcha Barwa extreme east of Arunachal Pradesh.
- Earlier known as Assam Himalayas.
- Himalayan range enters Arunachal Pradesh from Bhutan in the West Kameng district.
- Characteristics
 - High ridges and low valleys
 - o Altitude 800 m to 7,000 m above sea level.
 - O **Extend** from the east of the Bhutan Himalayas Diphu pass in the east.
 - O **Dissected by the Brahmaputra,** which flows through a deep gorge after crossing Namcha Barwa.
- Major tribes- Monpa, Abor, Mishmi, Nyishi and the Nagas- practice Jhumming.

Purvanchal Himalayas

- Geologically considered part of the Himalayas
- Has structural differences, thus, separated from the main Himalayan ranges.
- Lies south of the Brahmaputra valley.
- Belong to Arakan Yoma orogenesis.
- Have **loose**, **fragmented sedimentary rocks** like shale, mudstone, sandstone, quartzite

- Most fractured parts of the Himalayas.
- Naga fault line- earthquakes and landslides
- Rainfall 150-200 cm
- Densely forested
- Elevation decreases from north to south.
- Convex to the west.
- Low hills where Jhum cultivation is prevalent.
- Major Hills:

D-fl- IIII-	- I					
Dafla Hills	Location: north of Tezpur and north Lakhimpur					
Bounded on west by the Aka Hills and on the east by the Abor Range. About the Alaman and Aman an						
Abor Hills	Location: region of Arunachal Pradesh in NE of India, near China border					
	Bordered by Mishmi Hills and Miri Hills.					
	Drained by the Dibang River, a tributary of the Brahmaputra.					
Mishmi Hills	Location: southward extension of the Great Himalayan ranges.					
	Northern and eastern parts touch China.					
Patkai Bum	Location: India's NE border between Arunachal Pradesh and Myanmar.					
Hills	"Patkai" - "to cut chicken" in Tai-Ahom language.					
	• Originated by the same tectonic processes that resulted in the formation of the Himalayas in the					
	Mesozoic.					
	Have conical peaks, steep slopes and deep valleys					
	Not as rough as the Himalayas.					
	Whole region is surrounded by forests composed of sandstones.					
Naga Hills	Location: extending into Myanmar forms a divide between India and Myanmar.					
	Highest peak - Saramati.					
	Receive a heavy monsoon rainfall and densely forested.					
Manipur Hills	• Location: north of Nagaland, Mizoram in the south, upper Myanmar in east and Assam in the west					
	bound Manipur Hills.					
	Border between Manipur and Myanmar.					
	Loktak Lake - only floating national park of the world.					
	Keibul-Lamjao national park situated here.					
Mizo Hills	Location- south-eastern Mizoram state.					
	Formerly known as Lushai Hills.					
	Highest part- Blue Mountain.					
	Part of the North Arakan Yoma system.					
	Also known as 'Molasses basin' - made up of soft unconsolidated deposits.					
	Shifting agriculture and some terrace cultivation practised.					
Tripura Hills	• series of parallel north-south folds, decreasing in elevation to south.					
	Merge into greater Ganges-Brahmaputra lowlands (aka Eastern Plains).					
Mikir Hills	Location- south of the Kaziranga National Park, Assam.					
	Part of the Karbi Anglong Plateau.					
	Mikir Hills - oldest landform in Assam.					
	Radial drainage pattern					
	Major rivers- Dhansiri and Jamuna.					
	Highest peak – Dambuchko.					
Garo Hills	Location: Meghalaya state.					
	Highest peak: Nokrek Peak.					
Khasi Hills	Part of Garo-Khasi Range in Meghalaya.					
	Cherrapunji - East Khasi Hills.					
	Highest peak: Lum Shyllong.					
Jaintia Hills	Location: further to the east of the Khasi Hills.					
Barail Hill	Location: North Cachar Hill District.					
	Southwestern extension of the Patkai Range.					
	Runs in a south-westerly direction from southern Nagaland and parts of northern Manipur up to the					
	Jaintia Hills of Meghalaya.					

Himalayan Passes

1. Passes of Jammu and Kashmir and Ladakh

Banihal Pass (Jawahar Tunnel) Zoji La Connects Banihal with Qazigund. Connects Srinagar with Kargil and Leh. Border Road Organization- clears and maintains the road, especially during winter. Burzil Pass Joins the Valley of Kashmir with the Deosai Plains of Ladakh. Pir-Panjal Pass Closed after the partition. Shortest roadway access to Kashmir valley from Jammu. Qara Tagh Pass Mountains. A subsidiary of the ancient silk route. Khardung La Connects Leh and Siachen glaciers. Closed during the winter. Thang La Aghil Pass North of Mount Godwin-Austen in Karakoram. Connects Ladakh with Xinjiang province of China. Chang-La Chang-La Connects Ladakh with Tibet. Lanak La Aksai Chin in Ladakh region. Connects Ladakh and Lhasa. Chinese authorities have built a road to join Xinjiang with Tibet. Khunjerab Pass North Indo-China border				
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2. Passes of Himachal Pradesh

Shipki	Passes through Sutlej Gorge.
La Pass	Connects Himachal Pradesh with Tibet.
	• India's 3rd border post for trade with
	China (Lipu Lekh and Nathula Pass)
Bara-	Himachal Pradesh- Leh-Ladakh
Lacha	Situated on the National Highway in
Pass	Jammu and Kashmir.
	Connects Manali and Leh.
Debsa	Joins Spiti and Parvati Valley.
Pass	• Between the Kullu and Spiti of

		Himachal Pradesh.	
	•	Bypass route of Pin-Parvati Pass.	
Rohtang	•	High road transportation- high jams	
Pass	•	Connects Kullu, Spiti, and Lahaul.	

3. Passes of Uttarakhand

	T
Lipu	 Connects Uttarakhand with Tibet.
Lekh	• Important border post for trade with
	China.
	The pilgrims for Kailash-Manasarovar
	travel through this pass.
Mana	Located in the Greater Himalayas.
Pass	 Connects Tibet with Uttarakhand.
	Remains under snow for six months
	during winter.
Mangsha	 Connects Uttarakhand-Tibet.
Dhura	 Known for landslides.
Pass	Pilgrims for Manasarovar cross this
	route.
Muling	Seasonal pass
La	 Connects Uttarakhand with Tibet
	 Snow covered during the winter season
Niti Pass	 Joins Uttarakhand with Tibet.
	 Remains snow-covered during the
	winter season.
Traill's	Situated at the end of the Pindari
Pass	glacier.
	Connects the Pindari valley to Milam
	valley.
	Steep and rugged.

4. Passes of Sikkim

Nathu	Located on the India- China border.	
La Pass	• Forms a part of an offshoot of the	
	ancient silk route.	
	• One of the trading borders posts	
	between India and China.	
Jelep	Passes through the Chumbi valley.	
La Pass	• Connects Sikkim with Lhasa , the capital	
	of Tibet.	

5. Passes of Arunachal Pradesh

	T	
Bomdi-La	• Connects Arunachal Pradesh -	
	Lhasa , the capital city of Tibet.	
	 Located in the east of Bhutan. 	
Dihang pass	• Located in the Northeastern	
	states of Arunachal Pradesh.	
	Connects Arunachal Pradesh with	
	Myanmar (Mandalay)	
Diphu pass	An alternate route to Myanmar.	
	• Remains open throughout the	
	year for transportation and trade.	
Lekhapani	Remains open throughout a year	
	for transport and trade.	
	 Connects Arunachal Pradesh with 	
	Myanmar.	
Pangsan Pass	Connects Arunachal Pradesh and	
	Myanmar.	

Yonggyap	Connects	Arunachal	Pradesh	with
Pass	Tibet			
Kumjawng	Connects	Arunachal	Pradesh	with
Pass	Myanmar			
Hpungan Pass	Connects	Arunachal	Pradesh	with
	Myanmar			
Chankan Pass	Connects	Arunachal	Pradesh	with
	Myanmar			

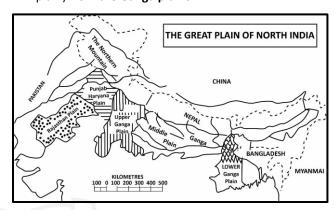
Tuju Pass:

- Manipur.
- Connects Imphal to Myanmar.

2. Great Plains of India

- Lie to the **south of Shiwalik** separated by the Himalayan Front Fault (HFF).
- A transitional zone between the Himalayas and Peninsular India.
- Aggradation plain formed by alluvial deposits of the Indus, Ganga, Brahmaputra and their tributaries.
- Stretches for about 2400 km from west to east.

- Width- 90-100 in Assam, 160 km near Rajmahal (Jharkhand), 200 km in Bihar, 280 km near Allahabad and 500 km in Punjab. (Increases from east to west.)
- Consists largely of alluvial deposits brought down by rivers of the Himalayan and the Peninsular region.
 - Maximum depth > 8000 metres Ambala,
 Yamunanager and Jagadhri (Haryana).
- Merges into the **Thar Desert** in the **southwest**.
- A low watershed of the Delhi ridge (278 m) + Yamuna
 River separates the Satluj plains (a part of the Indus plain) from the Ganga plains.



Divisions of the Great Plains

A. North-South Division of Great Plains of India

1. Bhabar	Along the foot of Siwaliks with remarkable continuity from Indus to Tista.
	8-16 km wide belt consisting of gravel and unassorted sediments
	Deposited by Himalayan rivers in the foreland zone due to sudden slope break.
	Himalayan rivers deposit their loads along the foothills in the form of alluvial fans.
	 Coarser sediments merged to build up piedmont plain/ Bhabar.
	Most unique feature - porosity.
	o Porous due to the deposition of a huge number of pebbles and rock debris across the alluvial
	fans.
	Not suitable for agriculture
	Comparatively narrow in the east
2. Tarai	10-20 km wide marshy region in the south of Bhabar and runs parallel to it.
	Wider in eastern parts of the Great Plains - Brahmaputra valley due to heavy rainfall.
	Re-emergence of underground streams of the Bhabar belt
	• Most of Terai land (especially in Punjab, Uttar Pradesh and Uttarakhand) has been reclaimed and
	turned into agricultural land over some time.
	Receives high rainfall and has excessive humidity.
	 Has underground streams → ground marshy.
	Suitable for wheat, maize, rice, rice, sugarcane, etc.
3. Khadar	Younger alluvium of flood plains of numerous rivers
	Also known as Bet/betlands (in Punjab).
	Contains new alluvial deposits along the course of the river.
	• Alluvium – light-coloured and poor calcareous matter consisting of sand, silt, mud and clay deposits.
	Suitable for extensive cultivation.
	• Rivers in the Punjab-Haryana plains have broad floodplains of Khadar flanked by bluffs known as
	Dhayas.
4. Bangar o	Uplands (alluvial terrace) formed by deposition of older alluvium.
Bhangar	Lies above the flood limit of the plains.
Plains	Main constituent: clay.
	Rich in humus - high yield.

- Contains Calcium Carbonate nodules known as 'Kankars' impure and found in doabs
 Regional variations:
 - O Barind plains- the deltaic region of Bengal
 - Bhur formations middle Ganga and Yamuna doab.
 - o 'Reh', 'Kollar' or 'Bhur' Drier areas- exhibit small tracts of saline and alkaline efflorescence.

B. Regional Classification of Great Plains

1. Sindh Plain

- Lies in Pakistan
- Mainly formed of the Bhangar Plains.
- Dhors: Long narrow depressions remnants of the course of former rivers.
- Dhand: Alkaline lakes on some Dhors.

2. Rajasthan Plains

- Occupied by Thar Desert.
- An undulating plain (average elevation 325 m above mean sea level).
- Desert region known as Marusthali forms a greater part of the Marwar plain.
- Has a few outcrops of gneisses, schists and granites
 - Proof that it is geologically a part of the Peninsular Plateau.
- Eastern part is rocky, while the western part has shifting sand dunes.
- Eastern part of Thar Desert till Aravalli Range -Rajasthan Bangar- semi-arid plain.
- Drained by several short seasonal streams from the Aravali and supports agriculture in some patches of fertile tracts.
- Luni a significant seasonal stream which flows into Rann of Kutch.
- Tract north of Luni thali or sandy plain.

3. Punjab Plain

- Form the western part of northern plain.
- Majorly in Pakistan.
- Divided into many Doabs. Formed by 5 important rivers of the Indus system.
- Literally means "(The Land of Five Waters" referring to: Jhelum, Chenab, Ravi, Sutlej, and Beas.

Sindh Sagar Doab	between the Indus and
	Jhelum rivers.
Jech Doabs/ Chaj	between the Jhelum and
Doab	Chenab rivers.
Rechna Doab	between the Chenab and
	Ravi rivers.

Bari Doabs	between the Ravi and Beas rivers.
Bist Doab	between the Beas and Sutlej rivers.

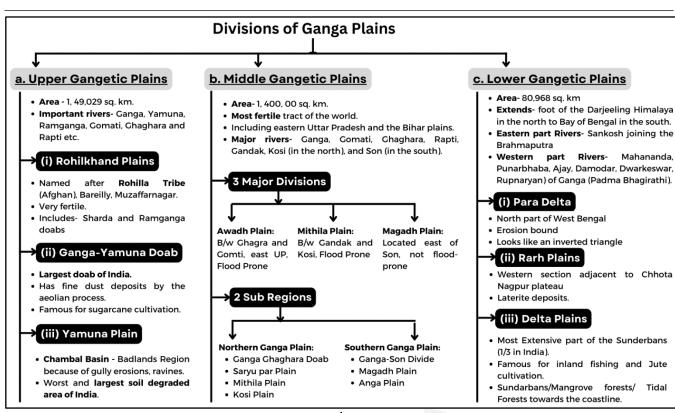
- Total area 1.75 lakh sq km.
- Average elevation 250 m above mean sea level.
- Eastern boundary Delhi-Aravali ridge.
- Northern part [Shivalik hills] is intensively eroded by numerous streams called Chaos.
 - Resulted in enormous gullying.
- South of Satluj river Malwa plain of Punjab.
- Area between the Ghaggar and Yamuna rivers -'Haryana Tract'.
 - O Water divide b/w Yamuna and Satluj rivers.

Other Doabs of India:

- Malwa Doab: Covers Madhya Pradesh and parts of north-eastern Rajasthan.
- Raichur Doab: A triangular region of Andhra Pradesh and Karnataka lying between Krishna and its tributary Tungabhadra River.

4. Ganga Plain

- Extend from Yamuna River in west to western borders of Bangladesh (~ 1,400 km).
- Average width 300 km.
- Maximum height Saharanpur (276m) decreases towards Sagar Islands (3 m).
- Largest unit of Great Plain of India from Delhi
 to Kolkata (about 3.75 lakh sq km).
- Major Himalayan river- Ganga.
- Peninsular rivers Chambal, Betwa, Ken, Son, etc. (join Ganga river system - contribute to formation of this plain).
- Slope east and south east.
- Rivers flow sluggishly in lower sections of Ganges resulting in levees, bluffs, oxbow lakes, marshes, ravines, etc.
- Rivers keep shifting their courses making this area prone to frequent floods.
 - o Kosi river- 'Sorrow of Bihar'.



5. Brahmaputra/Assam Plains

- **Area-** 56,274 sq. km
- Easternmost part of Great Plains
- Aggradation plain built up by the Brahmaputra and its tributaries.
- Extend from Sadiya (in the east) to Dhubri (near the Bangladesh border in the west).
- Majuli (area 929 km²)- largest river island in the world.
- Large marshy tracts → formation of terai or semi-terai conditions.
- 2 sub-regions:
 - O Upper Assam Valley
 - Lower Assam Valley

3. Indian Desert

A. Sandy Thar Desert

- India- ~ 85% of Thar Desert
- Rest- in Pakistan.
- 4.56% of the total geographical area of India.
- Geographical characteristics:
 - Location: partly in Rajasthan and partly in Punjab and Sindh.
 - Area: > 2,00,000 sq km.
 - Rainfall< 150 mm per year- arid climate with low vegetation cover.
 - Forms a natural boundary along the border Between India and Pakistan.
 - o Came into existence in the Pleistocene age.
 - Believed to be submerged in sea during the Mesozoic era.
 - Evidence wood fossils park at Aakal and marine deposits around Brahmsar, near Jaisalmer.

- Underlying rock structure of desert the extension of the Peninsular plateau.
- Major desert land features mushroom rocks, shifting dunes and oasis (mostly in its southern part).
- Also known as Marustali (the dead land) and Bagar.
- o Comprises of aeolian wind deposits
- o Dry climate and alluvial deposits
- O 2 parts:
 - Northern part sloping towards Sindh.
 - **Southern part** towards Rann of Kutch.
- Most rivers in this region are ephemeral.
- o Sand dunes elevation 150 m
- Metamorphic Rocks
- Short seasonal streams originating from Aravallis
- O Oasis in its southern part
- High and low dunes separated by sandy plains and low barren hills, or bhakars, rise abruptly from the surrounding plains.
 - Dunes continual motion and varying shapes and sizes.
 - Barchan/Barkhan- crescent-shaped sand dune produced by the action of wind

• Climate:

- Subtropical desert climate persistent high pressure and subsidence.
- Southwest Monsoon rainfall in the summer seasons.
- Low annual rainfall (4-20 inches) as compared to the other parts of India.
- Coldest month January
- Hottest month May and June.

- O Average temperature -
 - Summers- 75-70 degrees Celsius
 - Winters- 39-50 degrees Celsius
- Biodiversity and Vegetation:
 - Major features:
 - Drought-resistant scrub trees like khejri and proposis
 - Animals like blackbucks, gazelle, and partridges
 - Migratory birds such as ducks, geese, and grouse.
 - Herbaceous plants like cactus, neem, khejri, acacia nilotica-can accommodate varying temperatures and difficult climatic conditions.
 - Wild animals like leopard, Asiatic wild cat (Felis silvestris ornata), chousingha (Tetracerus quadricornis), chinkara (Gazella bennettii), Bengal desert fox (Vulpes bengalensis), Blackbuck (antelope) and several species of reptiles.

 Harsh natural environment and extreme temperature variations - severely inhibit vegetation growth.

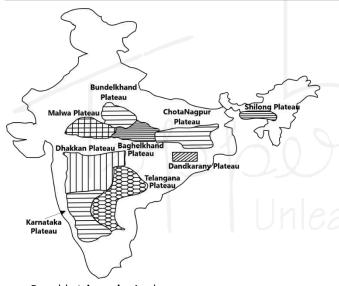
B. Cold Desert

- Located in Kashmir and Himachal Pradesh.
- Somewhere Between Tibet and India
- Harsh climatic conditions low rainfall and high elevation (3000 5000m above Sea Level).
- Blizzards, snowstorms and avalanches are common.
- Soil is not very fertile
- Very short growing seasons.
- Minimal water resources glacier-fed streams.

C. White Salt Desert of Kutch

- Also known as White Rann or Great Rann of Kutch.
- Area- 2898 square miles
- Covers- Gujarat and Sind region in Pakistan.
- Overall covering of white salt furnishing it a snowcovered aura.
- Extreme temperatures:
 - Summers: 50 degree celsius
 - Winter- < 0 degree celsius.

4. Peninsular Plateau



- Roughly triangular in shape.
- Extension:
 - O Apex at Kanyakumari.
 - o **NW** Delhi ridge
 - O East- Rajmahal hills
 - West- Gir range
 - South- Cardamom hills
- An extension also seen in northeast i.e. Shillong and Karbi-Anglong plateau.
- Area 16 lakh sq km (India as a whole is 32 lakh sq km).
- Height- 600-900 m above sea level (varies from region to region).
- Most rivers flow west to east, indicating general slope.
- Ranges:

- O Exception: Narmada-Tapti flows east to west.
- One of the oldest and most stable landforms of earth.
- Highly stable block composed mostly of Archaean gneisses and schists.
- Made up of different patland plateaus like Hazaribagh plateau, the Palamu plateau, the Ranchi plateau, the Malwa plateau, the Coimbatore plateau and Karnataka plateau, etc.
- Important physiographic features: tors, block mountains, rift valleys, spurs, bare rocky structures, series of hummocky hills and wall-like quartzite dykes offering natural sites for water storage.
- 3 groups on the basis of relief features

A. Central Highlands

- Northern part of the peninsular plateau.
- Also known as Madhya Bharat Pathar/ Madhya Bharat Plateau/ Central Highlands.
- East of the Marwar or Mewar Upland.
- Location:
 - North of Narmada River.
 - West Aravallis.
 - South- Satpura ranges (formed by a series of scarped plateaus)
- General Elevation: 700-1,000 m
- **Slopes** north and northeastern directions.
- Rivers:
 - o **Chambal** river rift valley.
 - o Kali Sindh- flows from Rana Prataph Sagar.
 - Tributaries- Banas, Parwan and Parbati.

Aravalli	One of the oldest mountain ranges.	
,	Sedimentary, metamorphosed rocks.	
	Elevation- 400-600 m (few hills well above 1,000 m).	
	Presently, seen as a discontinuous ridge from Delhi to Ajmer	
	Highest peak- Gurushikhar, Mt Abu (1722m).	
	Regional names- 'Jarga' near Udaipur and 'Delhi Ridge' near Delhi.	
Vindhya range	Source of many north-flowing rivers that meet Yamuna.	
	Represents the water divide of central India.	
	Major river: Mahi	
	O Origin from north side of Vindhya	
	O A west-flowing river.	
	As an escarpment running parallel to the Narmada-Son valley	
	Location: Gujarat, Rajasthan border to MP., UP, Chhattisgarh and Jharkhand	
	3 major divisions: Bharner hills, Kaimur hills and Parasnath hills	
	• General elevation: 300- 650 m.	
	Most made up of sedimentary rocks of ancient ages.	
	Watershed Between Gangetic and peninsular river systems.	
Satpura range	Run Between Narmada and Tapi, parallel to Maharashtra-MP border.	
	Found from Gujarat (Rajpipla hills) to Chhattisgarh.	
	Major part in MP	
	3 divisions: Rajpipla hills, Mahadev hills and Maikal hills	
	A block mountain having India's biggest rift valley.	
	Major rivers:	
	North - Narmada	
	o South - Tapti	
	Major folds: Maikal Hills, Mahadeo Hills near Pachmarhi, Kalibhit, Asirgarh, Bijagarh, Barwani	
	and Arwani (extends to Rajpipla Hills in Eastern Gujarat).	
	Highest peak- Dhupgarh (1,350 m) near Pachmarhi (Mahadev Hills).	
	• Amarkantak (1,127 m) - highest peak -Maikal Hills- origin of Narmada and Son.	
Kaimur Range	Eastern portion of the Vindhya Range in MP, UP & Bihar; runs parallel to river Son	
Mahadeo Range	Forms the central part of the Satpura Range, located in MP, Highest peak: Dhoopgarh	
Maikal Range	Eastern part of the Satpuras range (MP)	
	Maharashtra, south of river Tapi, sheltering caves of world-famous paintings of Gupta period	
	Manarashtra, south of river rapi, sheltering caves of world-ramous paintings of Gupta period	
Ajanta Range Rajmahal Hills	Located in Jharkhand made up of lava basaltic rocks	

Marwar	to the east of Aravallis in Rajasthan	
upland or	A rolling plain carved by the Banas River and its tributaries Berach river Khari rivers.	
Mewar	Average elevation - 250-500 m above sea level.	
Plateau	Composed of sandstone, shales and limestones of Vindhyan period.	
Madhya	East of Marwar upland.	
Bharat Pathar	Also known as Central Highland.	
	Major river- Chambal.	
	O Kali-Sindh, Banas, and Parbati.	
Malwa	Lies in Madhya Pradesh Between Aravali and Vindhya.	
plateau	Composed of an extensive lava flow- black soils.	
•	Narmada river - southern boundary.	
	Forms a triangle based on the Vindhyan Hills, bounded by	
	O Aravali Range - west	
	Madhya Bharat Pathar- north	
	o Bundelkhand - east.	
	2 systems of drainage;	
	O Arabian sea (The Narmada, the Tapi and the Mahi)	
	Bay of Bengal (Chambal and Betwa, joining the Yamuna).	
Bundelkhand	Lies along the borders of UP and MP .	
plateau	Intensive erosion, semi-arid climate - unfit for cultivation.	
•	Divided by deep valley uplands of the 'Bundelkhand Gneiss', consisting of granite and gneiss.	
	Boundaries:	
	O Yamuna river - north	

	Madhya Bharat Pathar - west				
	O Vindhyan Scarp lands- east				
	O South-east and Malwa Plateau - south.				
	Average elevation- 300-600 m above sea level				
	Slopes down from Vindhyan Scarp toward Yamuna River.				
	Characterized by senile (caused by old age) topography.				
	Rivers: Betwa, Dhasan and Ken.				
Baghelkhand	Lies north to east of the Maikal range.				
plateau	3 States - UP, MP, and Chhattisgarh				
	Made of limestone and sandstone in the west and granite in the east.				
	Separates Ganga basin from Mahanadi basin.				
	Bounded by the Son river in the north.				
	o Rihand Dam and Govind Ballabh Pant Sagar reservoir (largest manmade lake in India).				
	Contains Dharwar and Gondwana rocks.				
	Major coal fields- Sohagpur, Shahdol coal field				
	Central segment acts as a water divide Between Son drainage system (north) and Mahanadi River				
	system (south).				
	General elevation: 150 m to 1,200 m				
Chota Nagpur	North–east part of the Peninsular plateau.				
plateau	Composed mainly of Gondwana rocks.				
•	Average elevation: 600 to 700 m above sea level.				
	 Consists of a series of step-like sub-plateaus known as patlands. 				
	Mineral rich plateau				
	Also known as Ruhr of India.				
	Major rivers:				
	o Son - north-west boundary.				
	O Damodar, Subarnarekha, North Koel, South Koel and Barkar.				
	■ Damodar- flows through the rift valley from west to east.				
	Gondwana coal fields (most coal supply in India) found here.				
	Rajmahal Hills - northeastern border				
	Covered by lava flows (Basaltic).				
	Spread in a north-south direction				
	Average elevation - 400 m .				
Kathiawar	In Kathiawar region of Gujarat				
plateau	Has many pipe-like volcanic openings giving rise to many hill ranges like Girnar range, Junagarh				
Piateau	range, Pavagadh range etc.				
	Lake Nalsarovar (bird sanctuary) - Northeast boundary.				
	Little Rann- north.				
	Volcanic hills- Mandav hills and Balda hills.				
	Highest point: Mt. Girnar.				

- B. <u>Deccan Plateau</u>
- Triangular in shape.
- **Boundaries**
 - Satpura and the Vindhya- north-west
 - Mahadev and Maikal- north
 - Western Ghats west
 - Eastern Ghats east.
- Average elevation 600 m.
 - Rises to 1000 m in south but subsides to 500 m in the north.
- **Broadly divided into:**

- **Slope** west to east (evidenced by flow of rivers).
- Largest plateau in India
- Volcanic in origin.
- Sedimentary layers Between layers of solidified lavainter-trapping structure
- Black soil belt known as Deccan trap.
 - Good for **cotton** and **sugarcane** cultivation
 - Home to rich **mineral resources**
 - Good **hydroelectric** power **capacity**.

Maharashtra Plateau	Northern part of Deccan Plateau.		
	Underlain by basaltic rocks of lava origin.		
	Resembles a rolling plain due to the weathering.		
	 Horizontal lava sheets → formation of typical Deccan Trap topography. 		
	Covered by black cotton soil known as regur.		
Karnataka Plateau	Also known as Mysore plateau.		
Tapers to south Between Western and Eastern Ghats; merges with Nilgiris			
	Lies to south of Maharashtra plateau.		

	Baba Budan hills - iron ores
	Resembles a rolling plateau.
	Average elevation - 600-900 m.
	Intensely dissected by rivers from the Western Ghats.
	Highest peak- Mullayanagiri - Baba Budan Hills - Chikmagalur.
	• 2 parts:
	Malnad- a hilly region covered with dense forests.
	Maidan- rolling plain with low lying granitic hills.
Telangana plateau	Consists of Archaean gneisses.
	Average elevation - 500-600 m.
	Southern part is higher than the northern counterpart.
	Divided into Ghats and Peneplains
	Made up of Dharwar rocks & Gondwana rocks (Godavari valley).
	Major rivers- Godavari, Krishna, and Penna .
	Rich in mineral resources.
	Good rainfall (average of 100 cm/year).

C. Northeastern Plateau/ Meghalaya Plateau

- Extension seen in Karbi Anglong hills of Assam.
- Receives maximum rainfall from the south-west monsoon.
- Garo-Rajmahal Gap separates this plateau from the main block.
 - Formed by down-faulting
 - Filled by sediments deposited by Ganga and Brahmaputa.
- Western, central and eastern parts known as Garo Hills (900 m), Khasi-Jaintia Hills (1,500 m) and Mikir (Rengma) Hills (700 m).
- **Highest point** Shillong (1,961 m).

D. Western Ghats

- Formed by subduction of Arabian basin and tilting of peninsula in east and northeast during Himalayan uplift.
- One of the **eight biological diversity hotspots** in the world.
- Run from Tapi valley (21° N latitude) to north of Kanyakumari (11° N latitude) - 1,600 km.
- Extent: Gujarat, Maharashtra, Goa, Karnataka, Tamil Nadu and Kerala.
- UNESCO World Heritage site.
- Influence Indian monsoon by intercepting the rain-laden South-west monsoon winds.
- known as Sahyadri till 11° N.

Divisions of Western Ghats a. Northern Western Ghats b. Middle Sahyadri c. Southern Section • Separated from the main Sahyadri · From Tapi valley to a little north • From 16°N latitude up to Nilgiri hills. range by Pal ghat Gap (Palakkad Gap). · Composed of granites and gneisses. of Goa. Also known as the southern mountain · Basaltic lava rocks. · Covered with dense forests. complex. • Western scarp is dissected by headward • Highest peak-Kalsubai (1646 m) • Terminate abruptly on either side of • Average height - 1,200 m. erosion of west-flowing streams. this gap. • Average height - 1200 m. • Important passes: Thal ghat and • Highest peak - Anai Mudi (2,695 m). Major peaks: Vavul Mala (2339 m), Bhor ghat 3 ranges: Kudremukh (1892 m), Pashpagiri (1714 m). · Anaimalai (1800-2000 m)- north, Nilgiri Hills- junction of Western Ghats Palani (900-1200 m)- north-east with Eastern Ghats. o Cardamom Hills- south

E. Eastern Ghats

- From Odisha to North of Nilgiri hills
- Run parallel to eastern coastal plains of India.
- Discontinuous and dissected by rivers that drain into Bay of Bengal.
- Lower in elevation than western ghats.
 - O Highest peak Jindhagada peak (1690 meters).
 - O Also known as Arma Konda or Sitamma Konda.
- Main crop Rice.

Nilgiri Hills	 Referred as Blue Mountains, a range of mountains in the westernmost part of Tamil Nadu a 					
	the junction of Karnataka and Kerala					
	Hills are separated from the Karnataka plateau to the north by the Moyer River and from the					
	Anamalai Hills and Palni Hills to the south by the Palghat Gap					
Cardmom Hills	Part of Western Ghats, in southeast Kerala and southwest Tamil Nadu					

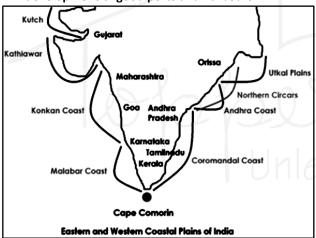
Pachamalai Hills	Also known as the Pachais
	Eastern Ghats in Tamil Nadu
Anamalai Hills	Also known as Elephant Hill a range of mountains in the Western Ghats in Tamil Nadu and
	Kerala with the highest peak Anaimudi

5. Coastal Plains

- Area- 7516.6 km (Mainland coastline is 6100 km and Island coastline of 1197 km).
- States- Gujarat, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Odisha, West Bengal and UTs-- Daman and Diu and Puducherry.
- Coastal plains in India are of 2 types:

A. Eastern Coastal Plains

- Location: b/w Bay of Bengal and the Eastern Ghats
- Width: 100 130 kms
- Extends from the Ganga delta to Kanyakumari.
- Marked by well-developed deltas of Godavari, Mahanadi, Kaveri, and Krishna.
- Important geographical features Chilika Lake and Pulicat Lake (lagoon).
- Wider and drier → resulting in shifting sand dunes.
- Very fertile for Agriculture.
 - O Delta of river Krishna Granary of South India.
- Emergent in nature Continental shelf extends up to 500 km into the sea, which makes it difficult for development of good ports and harbours.



Divisions:

Utkal coast	Extending Between Chilika and
	Kolleru Lake
	• Much wider than western
	coastal plains.
	Intense rainfall.
	Vulnerable to cyclones.
	Major crops: rice, coconut and
	banana
Northern Circar	• Northern part Between
	Mahanadi and Godavari,
	Krishna rivers.
Andhra coast	Between Kolleru and Pulicat
	Lake.
	• Forms a basin area for Krishna

	and Godavari rive	and Godavari rivers.			
Coromandel	 Between Pulication 	Lake and			
coast or Payan	Kanyakumari in T	Kanyakumari in Tamil Nadu.			
Ghat	 Remains dry in su 	Remains dry in summer.			
	 Receives rainf 	all during			
	winters.				
Golkonda Coast	Between the G	odavari and			
	Krishna River	Krishna River			

B. Western Coastal Plains

- Stretch from **Gulf of Cambay** (Gulf of Khambhat) in the north **to Cape Comorin** (Kanyakumari).
- Stretch for 1600 km north to south
- Width 10 to 25 km. (Widest off the Bombay coast. Rich in oil.)
- Straight coastline.
- Affected by South-West Monsoon winds over a period of 6 months. Thus, wetter than their eastern counterpart.
- More indented than eastern coast
 - Provides natural conditions for development of ports and harbours.
 - Eg. Kandla, Mazagaon, JLN port Navha Sheva,
 Marmagao, Mangalore, Cochin, etc.
- Characterized by a large number of coves (a very small bay), creeks (a narrow, sheltered waterway such as an inlet in a shoreline or channel in a marsh) and a few estuaries. Eg. estuaries of Narmada and Tapi.
- Rivers do not form any delta. Instead form a chain of waterfalls.
- Kayals Backwaters or shallow lagoons or the inlets of the sea and lie parallel to the coastline.
 - O Used for **fishing**, **inland navigation** and **tourism**.
 - o Largest Vembanad lake.
- **Submergent** coasts.

4 divisions:

4 divisions.						
Kutch and	•	Extension of Peninsular plateau				
Kathiawar	•	But treated as a part of Western				
coast		Coastal Plains as they are now				
		levelled down.				
	•	Kutch formed by the deposition				
		of silt by the Indus.				
		 Covered with shallow water 				
		during the monsoons				
		0	Divided	into	Great	Rann
			(north)	and	Little	Rann
			(east).			
	•	Kathiawar- south of Kutch.				
Konkan coast	•	Between Daman (north) to Goa			o Goa	
		(south).				